REPTILIA: SQUAMATA: VIPERIDAE

Catalogue of American Amphibians and Reptiles.

Beaman, K.R. and N. Wong. 2001. *Crotalus catalinensis.*

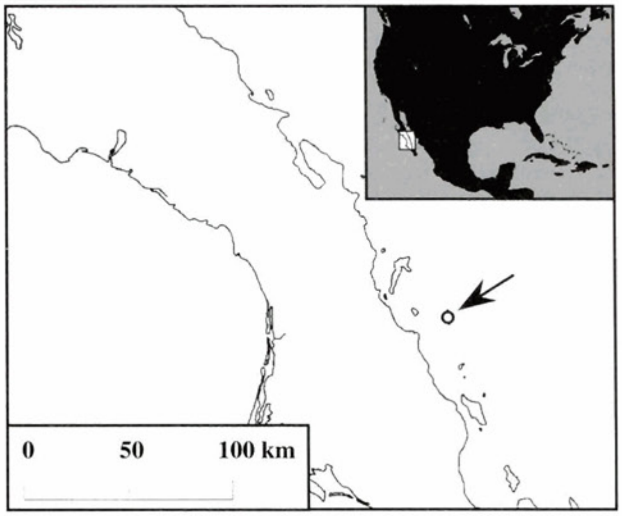
Crotalus catalinensis Cliff
Santa Catalina Island Rattleless Rattlesnake

Crotalus catalinensis Cliff, 1954:80. Type-locality, "Isla Santa Catalina in the Gulf of California, [Baja California Sur] Mexico." Holotype, California Academy of Sciences (CAS-SU) 15631, adult female, collected by Bruce Firstman, John C. Briggs, and Frank S. Cliff, 27 March 1953 (not examined by authors).

• **CONTENT.** This species is monotypic.

• **DEFINITION.** *Crotalus catalinensis* is a medium-sized rattlesnake, with a maximum recorded total length of 731 mm (female). The scutellation is as follows: midbody dorsal scale rows 25, ventrals 177–189 (177–181, males; 192–189, females), subcaudals 18–28 (24–28, males; 18–23, females), supralabials 13–16 (usually 14 or 15), infralabials 13–17 (usually 14 or 15), intersupraoculars 4 or 5. The first pair of infralabials is not transversely divided and a submental and interchinshields are absent. A single interoculabial separates the anterior subocular from the supralabials. A pair of irregularly shaped internasals, three times longer than wide, contact the rostral. The small anterior canthals are longer than wide, are in contact with each other medially, and partially border the concavity of the internasals. The posterior canthals are large relative to the anterior canthals, with the lateral portion of each scale extending ventrally over the canthus rostralis; together with the single vertically elongated loreal (in the position of the lower loreal), the lateral portion of the posterior canthal precludes the postnasal from contacting the upper preocular. More than 8 scales are present in the internasal-prefrontal region. On each side, the prenasal is in broad contact with the first supralabial. A distinctive morphological characteristic of this rattlesnake is the absence of any rattles other than the proximal segment. The lobes and grooves of the proximal segment are so poorly developed that a rattle segment is lost each time the snake sheds its skin.

Ground color is tan to pale gray-brown with few dark punctations. Medium-brown dorsal body blotches number 34–40, each with a dark brown to black border (about 1 scale wide) with cream-colored edging (also about 1 scale wide). One or 2 pale middorsal scales separate adjacent blotches. On the posterior portion of the body, both the pale and dark margins of blotches become indistinct. Anteriorly the dorsal blotches are longitudinally elongated and may be somewhat quadrangluar; at midbody they become roughly hexagonal or diamond shaped. The dorsum of the head is pale gray-brown punctated or irregularly marked with dark brown. The supraoculars have a relatively broad transverse pale streak through the centers. The pale stripes bordering the dark postocular stripe are broad but not sharply defined; the anterior pale stripe extends from the upper preocular to the supralabials under the eye, whereas the posterior pale stripe extends from the upper postocular to near the rictus. Of the three series of dark lateral blotches, the series of larger blotches is below the lateral extensions of the dorsal blotches; the two smaller series are situated along an imaginary vertical line about halfway between successive lateral blotches, one series above and one below the larger series. The dorsum of the tail has 5 or 6 black rings that encroach on the lateral portions of the subcaudals; the black rings are 4–5 scales wide dorsomedially, but are narrowed laterally. The ash-gray pale interspaces are a little narrower than the black rings along the dorsal midline and strongly contrast with the ground color on the posterior portion of the body. The proximal rattle segment is brown to black.



MAP. The circle indicated by an arrow points to Isla Catalina, the type locality and entire known range of *Crotalus catalinensis*.

• **DIAGNOSIS.** *Crotalus catalinensis* may be distinguished from all other crotalines by having irregularly shaped internasals,



FIGURE 1. *Crotalus catalinensis* from Isla Catalina, Baja California Sur, México (photograph by L.L. Grismer).

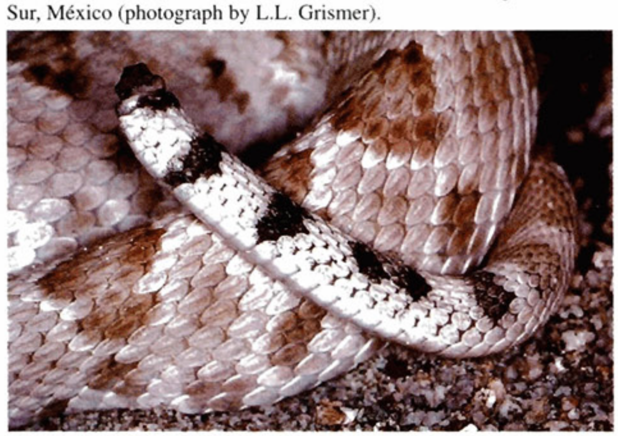


FIGURE 2. The tail of *C. catalinensis* depicting the vestigial rattle (photograph by L.L. Grismer).

an excessively large postcanthal, which extends laterally to separate the preocular from the postnasal, the first infralabials not divided transversly, and a distinct color pattern of dorsal blotches surrounded by well defined light scales and fewer punctations on the dorsal ground color.

• **DESCRIPTIONS.** The original description of *Crotalus catalinensis* was published by Cliff (1954). Additional descriptions appeared in Campbell and Lamar (1989), Mattison (1996), McPeak (2000), and Grismer (2001).

• **ILLUSTRATIONS.** A black and white photograph of the holotype was published by Cliff (1954). Black and white photographs of adults appeared in Klauber (1956, 1972), Shaw (1964a), Orr (1965a,b, 1982), Switak (1975), and Harris and Simmons (1977, 1978). Lindsay (1964) included a black and white photograph of an adult and of the tail, depicting the vestigial rattle. Color photographs of adults were published by Kisser (1980), González-Castillo (1988), Campbell and Lamar (1989), Vasse (1994), Mattison (1996), Greene (1997), Rubio (1998), McPeak (2000), and Grismer (2001). Color photographs of the tail depicting the vestigial rattle appeared in Campbell and Lamar (1989), Rubio (1998), McPeak (2000), and Grismer (2001). Shaw (1964a) published a black and white photograph of the tail in comparison with that of *C. ruber*. Radcliffe and Maslin (1975) included a black and white photograph comparing the proximal rattle segments of *C. catalinensis*, *C. r. lorenzoensis*, and *C. r. lucasensis*. Lindsay (1962) published a black and white photograph documenting the capture of *C. catalinensis*. Black and white photographs published in Shaw (1964a), Harris and Simmons (1977), Kisser (1980), and Grismer (1994a) and a color photograph in Lindsay (1964) depict the habitat on Isla Catalina.

• **DISTRIBUTION.** This species is endemic to Isla Santa Catalina, Baja California Sur, México.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** Murphy (1975, 1976, 1982, 1983a,b), Grismer (1994a,b), and Mattison (1996) discussed this snake's origin and evolution in Baja California. Arnaud (1970) described the collection of the holotype. Phylogenetic relationships were discussed by Cliff (1954), Klauber (1956, 1963, 1972), Radcliffe and Maslin (1975), Murphy and Crabtree (1985), Campbell and Lamar (1989), Murphy et al. (1989), and Greene (1997). Greene (1988) discussed variation and evolution of anti-predator mechanisms. Case (1983) commented on the relationship of body size in insular populations to prey size and availability. Various aspects of the species' biology are as follows: **evolution** (Brattstrom 1964), **evolution of rattle loss** (Leviton 1972, Mertens 1972, Radcliffe and Maslin 1975, Kisser 1980, Kilmon 1981, Ottley and Murphy 1983, Vasse 1994, Greene 1997, Rubio 1998), **evolution of insular body size** (Case 1978), **taxonomy** (Harris and Smith 1979, Underwood 1979, Mattison 1996, Rubio 1998, Grismer 1999a, 2001), **morphology** (Orr 1982, Stille 1987), **venom** (Bücherl and Buckley 1971, Brown 1973, Gans 1978, Russell 1979, Glenn and Straight 1982, 1985, Henderson and Bieber 1986, Bober et al. 1988, Khole 1991), **genetics** (Stewart and Morafka 1989, Stewart et al. 1990), **courtship and mating behavior** (Armstrong and Murphy 1979), **arboreal behavior** (Campbell and Lamar 1989, Rubio 1998, Grismer and Sigala Rodríguez 2000), **predatory behavior** (Chiszar et al. 1978), **natural history** (Shaw 1964a, Grismer and Sigala Rodríguez 2000, McPeak 2000, Grismer 2001), **reproduction** (Shaw 1964b, Mattison 1988), **conservation** (Tryon 1986, Flores Villela and Gerez Fernández 1988, Greene and Campbell 1992), **longevity** (Bowler 1977, Slavens 1978–2000), and **captive management** (Murphy and Armstrong 1978, Dixon 1982, Slavens 1978–2000, Trutnau 1982, Olney et al. 1982, 1986, 1987, 1988, Tremper 1982, Mattison 1988).

Lindsay (1962, 1964), Carlquist (1965), Orr (1965a,b), Cannon (1966), Hoge (1966), Soulé and Sloan (1966), Moore et al. (1968), Russell (1969), Ipsen (1970), Hoge and Romano (1971), Klauber (1971, 1982), Caras (1974), Petzold (1975), Harris and Simmons (1977, 1978), Armstrong and Murphy (1979), Underwood (1979), Kisser (1980), Hoge and Romano-Hoge (1981), Kilmon (1981), Pinney (1981), Russell (1983), Murphy and Ottley (1984), Phelps (1984), Mattison (1986, 1996), González-Castillo (1988), Obst et al. (1988), Grismer (1990, 2001), Flores-Villela (1993), McDiarmid et al. (1999), and McPeak (2000) documented the species' occurrence in Baja California. Harris and Simmons (1977, 1978), Campbell and Lamar (1989), and Grismer (2001) provided maps documenting its distribution in the Gulf of California.

Crotalus catalinensis has been included in checklists by Smith and Taylor (1966), Loomis et al. (1974), Harding and Welch (1980), Hoge and Romano-Hoge (1981), Murphy (1983c), Golay et al. (1993), Rubio (1998), and Grismer (1999b); in taxonomic keys by Cliff (1954), Klauber (1956, 1971, 1972), Sanborn and Loomis (1976), and DeLisle (1978); in bibliographies by Pérez Avramow (1969) and Smith and Smith (1976, 1993). Leviton and Banta (1956) included the holotype in a list of types from the Natural History Museum of Stanford University (now in the holdings of the California Academy of Sciences). Switak (1975) described collecting of *C. catalinensis*. Descriptions of habitat were published in Lindsay (1964), Shaw (1964a), Mattison (1996), McPeak (2000), and Grismer (2001).

• **ETYMOLOGY.** The name *catalinensis* is in reference to Catalina Island, Baja California Sur, México, where the species is endemic.

• **COMMENT.** Morphological, biochemical, and biogeographic data suggest that *Crotalus ruber* is the closest relative of *C. catalinensis* (Murphy and Crabtree, 1985). Insular endemics, *C. ruber lorenzoensis* and *C. molossus estebanensis*, and *C. r. lucasensis*, occurring on the peninsula, also exhibit a tendency toward rattle loss similar to that in *C. catalinensis*.

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